DELSIS (Determine the Extent of Lifestyle Support to Increase Self-management)

We need an efficient way to determine the extent of lifestyle support that a patient needs to stimulate their self-management. Where one might only need a hyperlink to a website, the other might need a full coaching program. With the right extent of support, unnecessary demand for healthcare can be reduced, which is essential to keep healthcare accessible in the future.

Rijnstate is a teaching hospital in the Netherlands and offers inpatient and outpatient services in 28 medical specialties, as well as emergency care, with a special focus on oncology, immunology, vascular care, and vulnerable elderly. Approximately 5,500 employees work at Rijnstate. Together they focus on the 450,000 residents in the service area. This makes them one of the largest healthcare providers in the Netherlands and the largest employer in the region.

Rijnstate wants to be at the forefront of innovation. That is why we are constantly working on ways to noticeably improve ourselves and our services. indeed, we believe that something can indeed lead to better care, then we really go for it. We want to realize innovations that are tangible, so we focus on evidence development of innovations in daily clinical practice. To make our care increasingly pleasant, flexible, and effective on all fronts. On a very human level. In other words: for you.

Challenge description

Increasing patients' self-management

Because of the growing demand for healthcare and the decreasing number of healthcare professionals, transformation is necessary to guarantee accessible and affordable healthcare in the future. This means, among other things, moving hospital care to the home setting and increasing patients' self-management. In other words, facilitating patients to be able to longer and better take care of themselves at home and only get professional care (physically or at a distance) when it is necessary. An important aspect of self-management is to promote a healthy lifestyle, e.g., healthy nutrition and physical activity.

What is the difficulty?

Rijnstate already started various initiatives to increase patients' self-management, such as education as part of remote patient monitoring and a lifestyle front office ("Gezondheidsplein"), in which lifestyle coaches, nurses and physicians help patients to improve their health and prevent (worsening of) diseases. An important part is to find the right way of supporting a patient, one that meets the needs of that particular person. One patient might prefer a hyperlink to a website with the right information, while the other might need a full coaching program. There are plenty of support possibilities, but we lack an efficient way to determine *the extent* of lifestyle support that a patient requires.

If patients receive too little guidance, then their self-management will not increase, and patients will need more professional care than strictly necessary. If patients receive too much guidance (e.g., many patients are unnecessarily referred to the lifestyle front office), then there

is also too much demand for professional care than strictly necessary, which is not an efficient use of healthcare staff. To keep healthcare accessible in the future, we need to find a way to support patients in a way that is tailored to the patient's needs.

What solution do we want?

We want a tool or method to determine the extent of lifestyle support that a patient needs. We do not have capacity to manually determine this for each patient in a conversation with a healthcare professional, so we need a digital tool, or a method combined with our existing digital tools that can facilitate this. The extent of support will mostly depend on the level of (digital) health literacy. It has to be a solution that is easy to use for patients of all levels of health literacy and digital skills. The solution should not contain the lifestyle support itself, because we already have existing methods. It should only contain the triage to determine the extent of support that is needed.

The goal

The goal is to assess the extent of lifestyle support patients need in order to tailor the way the support is given. In this way, we want to increase patients' motivation to improve their lifestyle and self-management. This should contribute to decrease/prevent further increase of the demand for healthcare, which is essential to guarantee accessible and affordable healthcare in the future.

Challenge main objectives

The main objective is to improve patients' self-management by providing the right extent of lifestyle support that fits patients' needs. We need a solution to automatically determine the *extent* of support that is needed, so not the content of the support but the support process. By increasing self-management, we aim to decrease unnecessary healthcare demand in order to guarantee access to healthcare in the future.

Solution functional requirements

Compulsory functional requirements

- The solution shall determine the extent of lifestyle support that a patient needs. It should not include the lifestyle support itself or advise about the content (i.e. an intervention), because that is already in place.
- The solution shall be easy to use for patients of all levels of (digital) health literacy.
- The solution shall include a way to measure the level of (digital) health literacy. Other and more detailed factors to determine the extent of support have to be further determined during the preparation of the pilot.
- The results of the solution (assessment) shall be easy to view and interpret for healthcare professionals (e.g., lifestyle coaches), so that they can then provide the patient with tailored lifestyle support.
- The solution shall be accessible for patients both at home and in the hospital, e.g. via a smartphone or laptop.
- The solution shall be proven effective in healthcare.
- The solution shall be available in Dutch.

Desirable functional requirements

- Preferably, the solution will be embedded in an existing system, so that patients will not have to log in to another system for this purpose (this would be in the long term, after a successful pilot).
- If applicable, the solution shall be tailored to the Rijnstate corporate identity.

Pilot scope

The project will be divided into three phases:

1. Exploration phase: establish what is necessary to determine the extent of lifestyle support that patients need. E.g. which questionnaires and data sources are required.
2. Pilot with test data.
3. Only if pilot with test data is successful: pilot with patient data.

Type and number of targeted end-users:

End-user type	Role	Number
Phase 2: Test "patients"	They will use the solution.	TBD
Phase 3: Real patients		50
Healthcare professionals (nurses, physicians)	They will provide requirements, validate the solution, and prescribe the solution to patients.	*Depending on the department*
Lifestyle coaches	They will provide requirements and validate the solution.	2

Table 1. Targeted users

Language

- The solution and the pilot have to be in Dutch.

Pilot set-up conditions

Ethical, legal, or regulatory

- The solution has to be fully GDPR compliant.
- The solution has to comply with ISO27001, NEN 7510, NEN 7512 and NEN 7513.
- Servers used for data storing have to physically be located within Europe.
- The privacy and security of the solution has to be approved by the Compliance & Risk department of the hospital.
- The suppliers and Rijnstate shall agree on a service level agreement before the pilot starts.

Technological

- The solution has to be compliant with the existing hospital architecture, for if an integration within an existing system is required/desirable after the pilot. In the pilot, the solution can be stand-alone.
- The solution has to be approved by the IT-department.
- More detailed technological requirements will follow when the solution and its place in the hospital infrastructure is further defined.

Data access

- The solution shall only use data provided by the patient. It shall not need data from e.g. the electronic medical record.

Other

- The solution has to be in line with the Rijnstate corporate identity and approved by the Communication department.
- From the start a rough estimate of the costs to scale up the solution after the pilot should be clear. This is to prevent the situation in which after the pilot it could turn out not feasible to carry the structural costs for scale up.

Expected impact and KPIs.

For the pilot, the expected impact is mostly measured by the user satisfaction. It will not be possible to measure a difference in self-management, because self-management includes more aspects than only (the extend of) lifestyle support.

A difference in healthcare demand is also hard to measure because this is also dependent on various factors outside the solution.

So, the KPIs for the pilot will include:

- Patients' satisfaction of the use of the solution: on average at minimum 7/10.
- Patients' satisfaction of the extent of lifestyle support received: on average at minimum 7/10.
- Healthcare professionals' satisfaction of the solution: on average at minimum 7/10.
- Lifestyle coaches' satisfaction of the triage that the solution provides: on average at minimum 8/10.

The expected impact and KPIs can be further detailed before the start of the pilot, depending on the solution.

Business opportunity

Market size

Internally at Rijnstate, the solution could after a successful pilot be expanded to be used by all departments for which patients' self-management should be increased. This is intended to be a hospital-wide solution since all patients can benefit from a healthy lifestyle and preventing (worsening of) diseases.

In addition, the solution could also be expanded to the region (e.g. primary care, social domain, or municipalities), other hospitals (e.g. start within the mProve network of 7 hospitals or regional hospitals) and other countries. The topic of healthy lifestyle and prevention is getting more and more attention and priority in society, so a tool to determine the extent of support that people need for this is broadly applicable.

Adoption plans

If the solution is successful, we plan to scale up the solution to be used at more departments and eventually for all patients for whom it is relevant (hospital-wide). A possible side effect or further development might also be that the result of the solution could be used in consults as advice to what should be discussed by the healthcare professional with the patient and on which level this should be.

Leading SME

GENERAL INFORMATION

NAME OF THE SME	Health Coins B.V.
DESCRIPTION OF THE SME	Health Coins B.V. (est. 2015 in the Netherlands) is aimed at making the healthy choice of the participants immediately interesting and attractive. We do this by using technology with a unique mix of reward, insight, gamification and social engagement.
WEBSITE URL	www.healthcoin.nl

Table 2. Leading SME general information

Solution proposed:

LAT – Lifestyle Assessment Tool

This project aims to develop a method to assess the extent of lifestyle support patients of the Rijnstate hospital require in order to tailor the support to a patient's needs. It does this by combining filled in questionnaires with environmental (Geographical Information System – GIS) data and the available lifestyle interventions of Rijnstate and partners of Rijnstate.

With this solution, individual patients are assessed on their level of knowledge about vitality and their ability to self-manage, which is used to quickly determine the appropriate extent of support. The healthcare professionals who work for the Gezondheidsplein (lifestyle front office) at Rijnstate will be able to manage a bigger caseload with qualitative good triage. This can result in decrease for the need for Rijnstate to hire more lifestyle coaches to analyse all patients that are in need to improve their lifestyle.

The solution will be safe, secure and scalable for all the persons in need of a healthier lifestyle.

A questionnaire is used to determine what extent of support is best for the patient to achieve a healthy lifestyle, e.g. self-managed, one-time consult of a lifestyle coach, coaching program, etc. The questionnaire consists of 20 to 30 statements about the current lifestyle, the needs, the goals and level of (health) literacy. The patient will also be invited to answer questions about their motivation towards a healthy lifestyle. Which strategy will be most effective will highly depend on the underlying motivational convictions that a person has. The questionnaire will deliver an individual score and (after review by a healthcare professional) a triage outcome to achieve and maintain a healthy lifestyle.

In the example below you will find a statement where the participant is invited to indicate the match with this statement (0 is 'absolutely not' and 10 is 'very accurate').
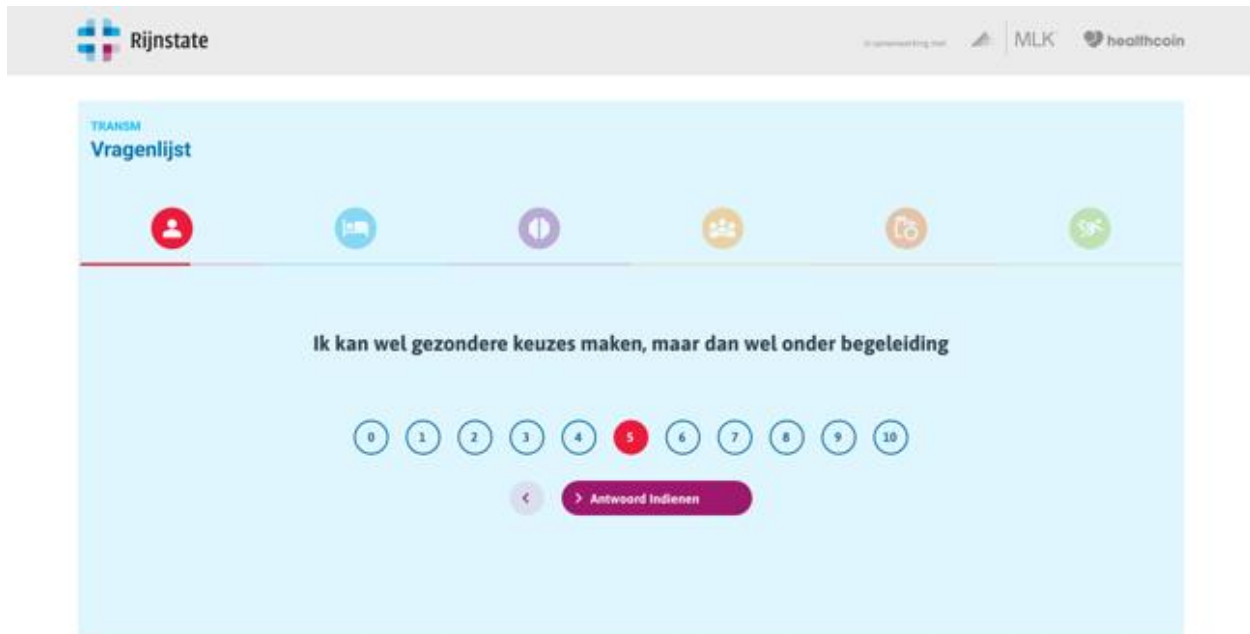
Figure 1. Questionnaire example

The tool will match the strategies of lifestyle interventions of Rijnstate and their Gezondheidsplein to the patients who fill in the questionnaire. The outcome of the questionnaire is an individual score which gives an indication of the level of accompaniment that a person needs in combination with the best intervention available that fits the needs and the goals of the individual. The output for the staff is a selection of triage outcomes. The rules for the selection of the triage outcome are programmed into business rules (like questions 5-8 that score below 5 are red flags for extra consult with a doctor). The tool can select the best possible triage outcomes that are derived from descriptions of the intervention. It uses AI based upon Large Language Models to generate triage outcomes.

These triage outcomes are to be approved by healthcare professionals. After that the participant will receive their triage outcome.

As shown in the illustration below, there are three possible triage outcomes for this patient.

Figure 2. Triage outcomes example

Apart from the lifestyle assessment process being more objective and accessible to everyone, the tool also can connect with lifestyle interventions and apps to directly invite participants to onboard and work on their lifestyle. In this way there is a direct way of supporting a healthy lifestyle for those who feel stimulated to start.

In the separate environment for healthcare professionals there is a well-documented view on the 'caseload': which participants filled in the questionnaire? Who are waiting for approval?

Figure 3. Application dashboard

Work to be done by the leading SME

Health Coins, as the leading SME, will implement the following activities during the solution co-creation and pilot (September 2024 to August 2025):

1. Planning, goal and KPI's, project team with roles – output: **project plan.**

2. Customer journey + legal check – output: **customer journey** (2x for patient and for healthcare professional).

3. Development framework – output: **framework**. Interviews with healthcare professionals to develop:

   a. Decision tree - Questionnaire development – testing

   b. Categories of questions

   c. Personas of patients. This is relevant to adapt the triage tool to certain characteristics of patients to make it more engaging. E.g. younger persons get a different use of words than older persons.

4. Triage outcomes – output: **information for tool to take into consideration for the triage outcomes.** Collect information about the triage outcomes and Rijnstate offers and match them with the questionnaire results to determine the business rules.

5. Communication – output: **mails/info/help info** in the tool.

   • Development of mails/information for patients and healthcare professionals with instructions.

- Selection of pilot group.

6. Implementation in tool MyLifeKit – output: **working demo** on website URL.

    a. Communication with patients / healthcare professionals

    b. Testing within project team

    c. After successful tests – pilot group is invited to fill in the questionnaires (50 participants)

    d. Evaluation

7. Evaluation: KPI evaluation (questionnaire) + (when positive) Scale up strategy – output: **evaluation report**

The interactions we are expecting to have:

- Project leader Rijnstate: once every two to four weeks a project update session. During the 12 months project around 15-20 interactions (1 hour per interaction).

- Healthcare professionals/lifestyle coaches: interview sessions + information briefings to inform about the process and how to fill in the satisfaction score at the end of the pilot. During the project 10-15 interactions (1 or 2 hours per interaction).

- Users/patients: 50 patients filling in the LAT and the satisfaction score (1 hour per patient).

Technological needs:

- The LAT can be filled in on the device of the patient or it can be filled in on a device within Rijnstate hospital.

- The environment in LAT for the professionals is a secure website that is accessible through a computer/laptop/tablet at Rijnstate.

- No technological requirements for the devices are needed.

Follower SME

Scope of work performed by the follower SME

Tasks

For the role of follower SME, we are looking for a company who can contribute to the successful use of the leading SME's solution and/or can help to scale up the solution.

Since we would like to receive a broad range of good proposals, we formulated three possible contributions that a follower SME could have to the project.

We are looking for an SME who could contribute to **one or more tasks** as described below:

1) Patient engagement

In order to make a success of the triage tool, we need a way to motivate patients to make use of it, that is to fill in the questionnaire(s). That means that we could use the help of a party who has expertise in the healthcare sector with the adoption of software or self-management solutions for patients. The follower SME should not build the software itself, which the leading SME will do, but they should know how to maximise patient engagement.

Questions to be answered:

- In what way should patients be approached to make them want to use the triage tool as a first step to improve their lifestyle?
- Where in a patient journey can questionnaires about lifestyle and self-management (the teachable moment) be best integrated for patients to participate?
- What motivates patients to open and use the triage tool?
- Are people more likely to use the triage tool on their own device or physically at the hospital either with or without support (for example from a volunteer) or in a more (innovative) interactive way?
- What keeps patients motivated to complete the questionnaire in the triage tool or which aspects lead to incomplete questionnaires?
- How can we make the tool accessible to patients with different digital- and health literacy skills?
- How can we make the use of the triage tool a positive experience for patients?

The product of the follower SME should be a concrete advise to improve patient engagement and/or should be a design that we can incorporate in the triage tool or the process in which the triage tool will be used. The goal will be to motivate patients to use the triage tool as a first step to improve their lifestyle. This way we want to maximise the outcomes of the triage tool and improve the user experience of patients.

2) Adaptation of triage tool (content) to cultural diversity

Question to be answered:

- How can we make the triage tool accessible to patients from multiple cultural backgrounds?

It will not only ask to translate the tool, but also to adapt it to the culture specific challenges concerning a triage tool or lifestyle content. This is both relevant for the variety of patients

within Rijnstate and to make the triage tool of the leading SME scalable to other (international) organisations.

The product of the follower SME should be a concrete advise to adapt the tool and the content of the questionnaire to people with different cultural backgrounds with at least two target groups involved to adjust the content.

3) Exploration market possibilities for triage tools

It would also be interesting to know how other triage tools for lifestyle on the market in the healthcare sector have been implemented and used, and to incorporate their lessons learned into our solution. The follower SME could be the one that gives advise based on experience with similar solutions as the leading SME's triage tool to make it more successful and/or scalable.

Questions to be answered:

- What does the market for AI-based triage tools look like in European countries participating in HealthChain?

- Are there other healthcare organisations interested in a triage tool for lifestyle support assessment?

- What is the state of the art of performing triage for lifestyle support?

- What are the problems or challenges in the current way for triage for lifestyle solution?

- Are there other suppliers for AI-based triage tools and if so, what products are currently used?

The product of the follower SME should be a market report for the market of AI-based triage tools containing some advice to incorporate lessons learned in the solution for Rijnstate and possibilities to scale-up the solution to other European countries.

Requirements

General requirements:

- Experience within healthcare.
- Any content that would be created must be owned by Rijnstate. That means all content should be made freely available to Rijnstate, during and after HealthChain, and Rijnstate must receive the rights for the source data.
- The solution must be created in collaboration with Rijnstate's Marketing & Communication department.
- Any designs must be in accordance with Rijnstate's corporate identity and policy.
- The solution must be in line with current initiatives for communication and the triage content that has been devised by Rijnstate and the leading SME.
- Any material that is used must be royalty-free in The Netherlands.
- The solution has to be fully compliant with the GDPR, ISO27001, NEN 7510, NEN 7512 and NEN 7513.
- Any servers used for data storing have to physically be located within Europe (also back-up servers).
- Any privacy, security and technical aspects of the solution have to be approved by the Compliance & Risk department and Information & Medical Technology department of Rijnstate.
- All proposed solutions must be approved by Rijnstate in terms of feasibility and all aspects mentioned above before development, especially in case of online solutions.

Additional requirements task 1:

- Experience with maximising patient engagement (we would like to see examples of previous experience in the proposal).
- Expertise in user (patient) experience, including users with limited digital or health literacy skills.
- Experience with motivating people to use a triage tool, complete a questionnaire or use software.

Additional requirements task 2:

- Experience in adapting software/information to apply to cultural differences, both between countries as within countries (we would like to see examples of previous experience in the proposal).

Additional requirements task 3:

- Experience with market research within healthcare (we would like to see examples of previous experience in the proposal).
- Experience with triage tools for lifestyle support assessment, e.g. level of health literacy, level of self-management, etc.